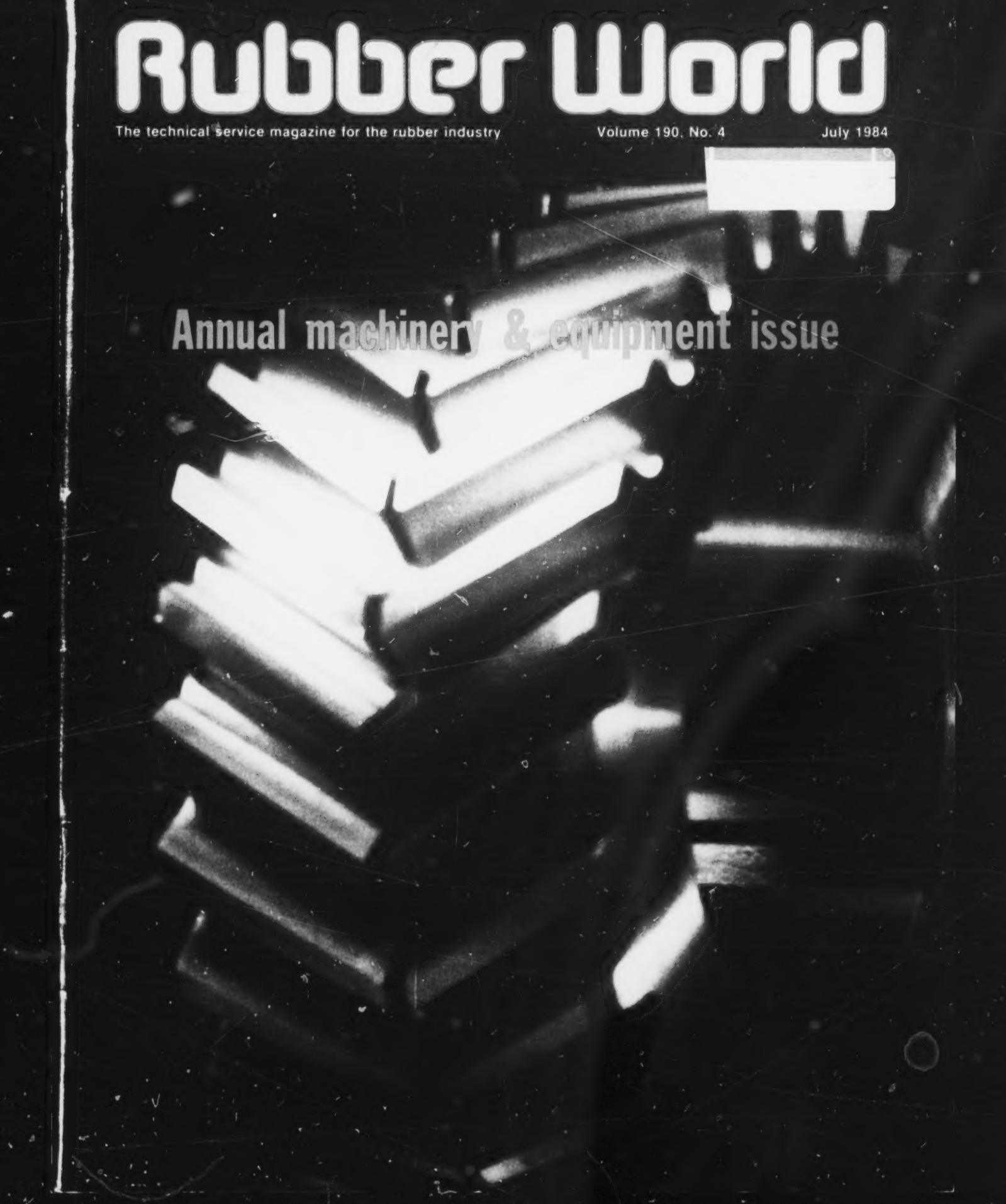
Rubber World

The technical service magazine for the rubber industry

Volume 190, No. 4 July 1984



Annual machinery & equipment issue

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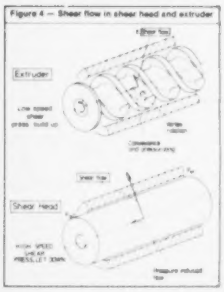

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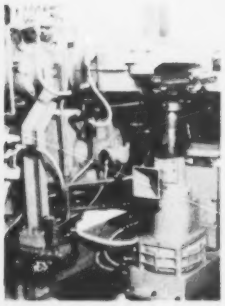

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by Jon Menough, contributing technical service editor. When properly cared for, machinery lasts longer, unscheduled downtime is reduced and plant operating costs are lower. This article discusses how gear lubrication can help achieve these ends.

15 Thermic aspects of rubber injection molding
by James Jennett, REP Corp. Part 1 of this article appeared in the June issue of *Rubber World*. In this installment the author looks at mold design, cold runner blocks and microprocessor controls versus conventional controls with regard to statistical process control.

26 Shear head technology—A new development for better extrusion
by Guenther H. Niehus, Krupp Industrietechnik. The requirements of the rubber industry for an economical way to improve productivity and better control of production processes has lead to the development of the shear head extrusion technology which is examined in this article.

36 The development potential of different concepts of rubber extruder
by Paul Meyer, Frenkel C-D Central Co. This article compares the following types of extruders: The Plastiscrew, the E.V.K., the Pin Type, the Cavity Transfer Mixer, and the Transfermix I and II.

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by Don R. Smith, managing editor. A *Rubber World* survey of rubber products manufacturers shows an increase in machinery buying among the results.

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Cover

Cover photo courtesy of Illinois Gear

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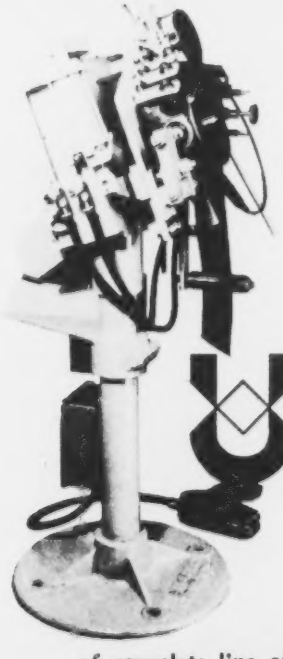
RMA monthly tire shipments & production report through March 1984 (figures in thousands of units)

Passenger Tires	1984	1983	% Change
Shipments			
Original Equipment	13,680	9,213	+48.49
Radial	11,423	7,707	+48.22
Replacement	33,262	29,372	+13.24
Radial	26,119	20,160	+29.56
Export	1,616	893	+80.96
Radial	1,205	550	+119.09
Total	48,558	39,478	+23.00
Radial	38,747	28,417	+36.35
Production	44,178	39,897	+10.73
Radial	32,502	27,776	+17.01
Ending Inventory	92,386	41,569	+122.25
Radial	65,351	31,317	+108.68
Truck & Bus Tires			
Shipments			
Original Equipment	1,912	1,178	+62.31
Radial	992	581	+70.74
Replacement	7,300	6,275	+16.33
Radial	2,432	1,885	+29.02
Export	350	243	+44.03
Radial	162	93	+74.19
Total	9,562	7,696	+24.25
Radial	3,586	2,559	+40.13
Production	9,190	7,971	+15.29
Radial	3,341	2,447	+36.53
Ending Inventory	19,208	8,718	+120.33
Radial	7,589	3,756	+102.05

cently by the Environmental Protection Agency, whose notice of proposed rulemaking prompted PMA's design of the container, a drum which reduces exposure of the chemical by workers to a minimum. The PMA resolution for the drum reads: "Be it resolved that the proposed blow-molded drum insert be approved as an acceptable container for the distribution of MOCA within the castable polyurethane industry and be it further resolved that representatives of the PMA are hereby authorized to propose to EPA the adoption of the proposed blow-molded insert drum container as the principal solution to the concerns raised by EPA in its May 1983 Advanced Notice of Proposed Rulemaking for MOCA." In addition to the drum itself, overall regulation by EPA will include exposure tesets at the Patel Institute in Columbus, Ohio, on worker exposure levels, safety labeling, and a decontamination procedure for the drum liner. The PMA Safety & Health Committee will pursue testing on decontamination of the liner as part of its recommendation to the EPA.

The International Trade Commission's finding that the domestic shoe industry is not being injured by imports was "appalling," "devastating," "incomprehensible," and "completely wrong," said Footwear Industry spokesman George Langstaff. He said that in gauging the industry's profitability, the ITC completely ignored the fact that 66 factories closed since 1982.

Radial Tire Bead Flippers



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RMA industry rubber report through March 1984 (figures are expressed in metric tons)

	Cumulative 1984	Cumulative 1983	% Change 84 vs 83
Total New Rubber			
New rubber available	831,030	668,474	24.47
Imports	285,459	193,884	47.23
Exports	85,153	72,143	18.03
Apparent Consumption	747,071	598,975	24.72
Total Natural Rubber			
Imports	224,656	161,275	39.30
Exports	5,291	4,957	6.74
Apparent Consumption	213,724	164,314	30.07
% Total new rubber	28.60	27.43	
Total Synthetic Rubber			
Production	546,571	474,590	15.17
Imports	60,803	32,609	86.46
Exports	79,862	67,186	18.87
Apparent Consumption	533,346	434,661	22.70
% Total new rubber	71.39	72.56	
Total SBR			
Production	253,969	229,344	10.74
Imports	18,674	12,524	49.11
Exports	24,833	19,655	26.34
Apparent Consumption	242,248	218,554	10.84
Total Nitrile			
Production	16,472	12,777	28.92
Imports	2,846	1,979	43.81
Exports	1,739	1,431	21.52
Apparent Consumption	17,666	13,326	32.57
Polybutadiene			
Production	86,167	76,630	12.45
Imports	17,231	7,239	138.03
Exports	6,251	3,525	77.33
Apparent Consumption	101,316	77,094	31.42
Ethylene-Propylene			
Production	52,368	39,314	33.20
Imports	231	22	950.00
Exports	7,988	7,457	7.12
Apparent Consumption	45,495	32,975	37.97
Butyl, Polyisoprene, Silicone and other Synthetic Elastomers			
Production	109,948	85,944	27.93
Imports	20,978	10,418	101.36
Exports	29,992	23,850	25.75
Apparent Consumption	101,122	73,036	38.46
Polychloroprene			
Production	27,646	30,582	-9.60
Imports	843	427	97.42
Exports	9,059	11,268	-19.60
Consumption	25,498	19,677	29.58

RW survey shows

Manufacturers increasing machinery purchases

by Don Smith, managing editor

There is good news on most fronts for machinery and equipment suppliers to the rubber industry according to the latest survey conducted by *Rubber World*. This survey polled 500 rubber product manufacturers on their machinery buying habits, and the results show that both new equipment manufacturers and used and rebuilt suppliers have increased sales and that this trend should continue through the rest of 1984.

The market has "loosened up" according to one new equipment supplier, saying that the market had been depressed for about three years. He, like others contacted about the survey results, feel their sales have increased significantly in the past year, but like most other areas of the industry this has brought them back to pre-recessionary levels.

The rebound in the rubber industry is evident from the fact that 91% of the respondents said business was either somewhat better or much better than 1983, with 40% stating much better. The remainder indicated there was no change with no one claiming business was worse. The breakdown of the respondents showed 31% served automotive markets, 17% construction, 10.3% chemical with the remaining markets — printing, recreation, oil & gas, mining agriculture, appliances between 5-10%. The principal products manufactured were mechanical goods, accounting for 67% in the survey. Hose and belting was next at 9%, tires and tubes 7.2%, footwear 5.4%, and wire and cable 1.2%.

The upturn in the industry is reflected in the fact that over 45% of the survey respondents said their company increased capital expenditures for rubber machinery this year with the increases averaging 23.5%. Almost 55% said they have already purchased new equipment.

A recent Survey of Current Business conducted by the U.S. Department of Commerce shows expenditures for new plant and equipment in the rubber industry is expected to increase 15.4% as a whole. This is slightly down from the 16.1% increase expected when plans were revealed in November and December of 1983. The current figures come from plans reported in January and February of 1984.

"They were looking at almost everything we had to offer and some wanted the machinery immediately."

The Commerce Department figures show expenditures declined 3.4% in 1982 from 1981 and increased 11.9% in 1983 over 1982. The *Rubber World* survey indicates most of the buying in 1983 occurred in the last quarter.

This sudden flurry of equipment purchases bears out what a couple of machinery manufacturers said when they indicated the rubber product manufacturers go on "crash buying" sprees. These suppliers said there was very little activity in the rubber industry until about nine months ago when, as one put it "they were looking at almost everything we had to offer and some wanted the machinery immediately." Some suppliers said it appeared many manufacturers were delaying equipment purchases for various reasons, the recesssion being primary, and were caught off guard when the industry began to turn around and they had to increase production.

The Commerce Department figures show that capacity utilization rates in the rubber industry increased 4.5% in 1983 from September to December and the change from December 1982 to December 1983 was 9.2% indicating that production is up throughout most of the rubber industry. The industry's rate of 82.1% is well above the national average for all manufacturing at 76.9%.

The *RW* survey shows that the machinery in greatest demand are presses, mills, lathes, extruders, grinders and mixers. Testing and measuring equipment purchases haven't increased as much as the production equipment. Almost 28% of the manufacturers purchased this type of equipment since 1983 and 31% planned to purchase in 1984. The largest percentage bought rheometers, which was also the piece most indicated by those intending to buy.

The rubber industry has not jumped on the process control bandwagon with only 35.2% of the companies responding stating they have added PC equipment. Less than 5% of those have added process control to all of their manufacturing lines while the others have added it to such operations as molding, extruding, die cutting and presses.

The used and rebuilt dealers to the industry came out favorably as almost 95% of the companies said they consider purchasing used or rebuilt equipment when they are in need of machinery. Since 1983, 41% have purchased used or rebuilt pieces. Presses were purchased most often accounting for 39% of used and rebuilt purchases, followed by ovens (26%) and lathes, mills, extruders,

Expenditures for New Plant and Equipment by U.S. Nonfarm Business: Percent Change From Preceding Year

	1982	1983		1984	
	Actual	Planned[1]	Actual	Planned[2]	Planned[3]
Chemicals	−2.4	3.2	.1	6.3	8.0
Rubber	−3.4	8.0	11.9	16.1	15.4

[1]Plans reported by business in January and February 1983.
[2]Plans reported by business in November and December 1983.
[3]Plans reported by business in January and February 1984.

Change in Business Sale: Percent Change From Preceding Year

	1982	1983		1984
	Actual	Expected[1]	Actual	Expected
Chemicals	−3.4	13.4	9.5	10.6
Rubber	−8.2	1[illegible]	7.8	11.2

[1]Expectations for 1983 are based on the survey conducted in late January and February 1983.
[2]Includes industries not shown separately.
Source: U.S. Commerce Dept.

Manufacturers' Capacity Utilization Rates: Operating Rates and Ratios of Operating to Preferred Rates[1]

Industry and asset size	Operating rates (percent) 1982 June	1982 Sept.	1982 Dec.	1983 Mar.	1983 June	1983 Sept.	1983 Dec.	Ratios of operating to preferred rates 1982 June	1982 Sept.	1982 Dec.	1983 Mar.	1983 June	1983 Sept.	1983 Dec.
Chemicals	69.7	69.3	65.8	68.8	71.5	75.9	77.5	.77	.77	.73	.76	.79	.84	.86
Rubber	75.5	69.7	72.9	75.8	76.1	77.6	82.1	.81	.75	.78	.80	.81	.83	.88

[1]The survey asks manufacturers to report actual and preferred rates of capacity utilization for the last month of each quarter. Utilization rates for industry and asset-size groups are weighted averages of individual company rates. See "The Utilization of Manufacturing Capacity, 1965-73," Survey of Current Business, July 1974, p. 47.

Source: U.S. Commerce Dept.

grinders, and calenders accounting for 8-10% each.

In ranking the considerations for buying used or rebuilt rubber machinery, most manufacturers said that price was the top priority with quality close behind. Condition of the machine, availability and reliability of the seller were mentioned frequently by the respondents with after the sale service and delivery rated the least.

Conversely, price was rated as the least important consideration by rubber product manufacturers when buying a new machine. Perceived quality was rated the top consideration followed by after the sale service, warranties, delivery and operator training.

Although the survey indicates increased activity by the rubber product manufacturers, many implied that an increase in machinery and equipment buying was in the offing. "If business continues to improve, we will be budgeting for a mixing mill and mold shop enlargement," one manufacturer said, reflecting what quite a few respondents said. It seems that while they are enjoying the upturn, many are still leary of the economy with high interest rates being at the base of their worries. They are waiting to see if the recovery is solid and long lasting and not just an aberration. Also the changes occurring in process control have made some hesitate on machinery purchases as one manufacturer said "we get concerned over purchasing a piece of equipment which may be obsolete in two to three years, we have to determine if the piece is adaptable to the new technologies."

"The industry's capacity utilization rate of 82.1% is well above the national average for all manufacturing at 76.9%."

Many of the machinery suppliers polled on the results of the survey indicated they have not changed their production schedules, by adding shifts or increasing output just as yet. Most said their business was up considerably over the past two years and some have recalled laid off workers. McNeil Akron recently recalled 40 workers because of their increase in orders and implied they might recall more. Many suppliers said the new activity has helped them reduce inventories with some saying that delivery times were beginning to increase, a problem welcomed because it meant more sales.

It's a two-way street

Keeping *you* informed means keeping *us* informed. To report to you the latest in rubber industry happenings, the editors of Rubber World rely on many sources of information. One of our most important sources is you, our reader.

We welcome and encourage your input — employe newsletters, meeting reports, equipment releases, letters to the editor, phone calls. Let us know what's happening with your company; what you're thinking. We want to hear from you.

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